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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Stefano Oggioni

Examiner: Graybill, David E.

Serial No.: 09/638,729

Art Unit: 2814

Filed: 8/14/00

For: **BALL GRID ARRAY MODULE**

Commissioner for Patents  
Washington, D.C. 20231

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**AMENDMENT**

Sir:

In response to the Office Action mailed January 7, 2002, please amend the above-identified application as follows:

**In the Drawings:**

Please revise the drawings in accordance with the Request for Approval of Drawing Corrections attached hereto.

**In the Claims:**

Please add new claim 12. The following claims 1, 3-8, and 12 are currently pending in this application, based on the amendment herein. Claims 9-11 are withdrawn.

A)

1. (AMENDED) An electronic package comprising:

a metal member;

a dielectric layer positioned on said metal member, wherein

said dielectric layer comprises a photo-imageable dielectric material;

an active element positioned on said dielectric layer;

A1  
cont a first plurality of electrically conductive members positioned on said dielectric layer relative to said active element;

a plurality of metallic traces on said dielectric layer, selected ones of said metallic traces in electrical contact with said active element and selected ones of said first plurality of electrically conductive members;

a second plurality of electrically conductive members positioned on said dielectric layer; and

at least one electrically conductive via in said dielectric layer, said at least one of said second plurality of electrically conductive members in contact with said metal member not electrically coupled to said metallic traces.

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A2 3. The electronic package of claim 1, wherein said dielectric layer has a thickness of from 25 microns to 115 microns.

4. The electronic package of claim 1, wherein each of said plurality of metallic traces has a width of from 50 microns to 260 microns.

5. The electronic package of claim 1, wherein said second plurality of electrically conductive members is positioned on said dielectric layer peripherally to said first plurality of electrically conductive members.

A2  
cont 6. The electronic package of claim 1, further including a mother board positioned on said first and said second plurality of electrically conductive members, said mother board including a ground plane.

7. The electronic package of claim 6, wherein said ground plane is electrically coupled to said metal member.

8. The electronic package of claim 7, wherein said metal member comprises an electromagnetic shield for said active element.

A3  
12. (NEW) The electronic package of claim 1, wherein the photo-imageable dielectric material undergoes a chemical change and polymerizes when exposed to light, so as to become non-soluble to a developer solution.

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#### REMARKS

Claims 1, 3-8, and 12 are currently pending in this application based on the amendment herein. Claims 9-11 are withdrawn. The Examiner objected to Figures 1-3 and 6 stating that said figures should be designated by a legend such as --Prior Art-- because only that which is old

is illustrated. In response, Applicant has amended FIGs. 1-3 and 6.

The Examiner rejected claims 1 and 3-8 under 35 U.S.C. §103(a) as being unpatentable over the combination of Vendramin (5955789) and Marrs (5583378).

The Examiner rejected claim 2 under 35 U.S.C. §103(a) as being unpatentable over the combination of Vendramin and Marrs as applied to claims 1 and 3-8, and further in combination with Datta (6222156 B1).

Applicant respectfully traverses the §103(a) rejection with the following arguments.

**35 U.S.C. §103(a)**

As to claim 1, Applicant respectfully contends that Vendramin, Marrs, and Datta do not individually or collectively teach or suggest each and every feature of claim 1 as amended. For example Vendramin, Marrs, and Datta do not teach or suggest the feature of “a dielectric layer positioned on said metal member, wherein said dielectric layer comprises a **photo-imageable dielectric material**,” emphasis added. Vendramin and Marrs do not teach or suggest a dielectric layer that comprises a photo-imageable dielectric material. One reason for using the photo-imageable dielectric material is to reduce the overall thickness of the dielectric material, thereby reducing the thickness of the electronic package. Reducing the thickness of the dielectric material is disclosed in the specification on page 8, lines 9-24. Applications such as PCMCIA, PDA, GPS, and GSP that require a thin electronic package are disclosed in the specification on page 5, lines 24-29 and page 6, lines 1-10. Another benefit to reducing the thickness of the dielectric material is to reduce impedance of the electronic package. Reducing the

impedance of the electronic package is disclosed in the specification on page 11, lines 10-29 and page 12, lines 1-2. Vendremin does not teach or suggest any reason for reducing the overall thickness of the dielectric material. Likewise Vendremin does not even discuss reducing the impedance of an electronic structure or any other design consideration that is suggestive of a need to use a photo-imageable dielectric material. Marrs merely teaches a ball grid array package with a thermal conductor which has no relationship either Vendramin or the present invention. Datta teaches a laser repair process that is used to repair wiring shorts on a printed wiring board The laser repair process may be used to repair wiring shorts on a photosensitive dielectric material because the light sensitive characteristics of a photosensitive dielectric material facilitate the use of a laser. The aforementioned process of Datta has no relationship to either Vendramin or the present invention. The Examiner has not provided any reason why a person of ordinary skill in the art would use the photo-imageable material of Datta in conjunction with Vendramin's disclosure. Based on the preceding arguments applicant maintains that it would not be obvious to combine the teachings of Vendramin with the teachings of Marrs and Datta, since none of the aforementioned patents teach or suggest any reason to reduce the thickness of the dielectric material. Likewise none of the aforementioned patents discuss reducing the impedance of an electronic package. Applicant respectfully contends that Vendramin, Marrs and Datta do not teach or suggest every feature of claim 1 and that claim 1 is in condition for allowance. Since claims 3-8 and claim 12 depends from claim 1, Applicants contend that claims 2-8 and claim 12 are likewise in condition for allowance.

### CONCLUSION

Based on the preceding arguments, Applicant respectfully believes that claims 1, 3-8, 12 and the entire application meet the acceptance criteria for allowance and therefore request favorable action. If the Examiner believes that anything further would be helpful to place the application in better condition for allowance, Applicant invites the Examiner to contact Applicants' representative at the telephone number listed below.

Date: 04/03/2002

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